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### GUN-SHOT WOUNDS, PARTICULARLY THOSE CAUSED BY NEWLY-INVENTED MISSILES.

AN ESSAY WHICH RECEIVED THE FISKE FUND PREMIUM FOR 1864.—BY ALEXANDER M. BECKER, M.D., OF PROVIDENCE, R. I.

[Communicated for the Boston Medical and Surgical Journal.]

THE subject of "Gun-shot Wounds" is one of great interest, especially at the present time, when our country is engaged in a war which calls forth such large numbers of her sons, and exposes them to all the hardships and injuries of the field.

To treat this subject as fully as it deserves is, of course, impossible in an essay of this sort. I have therefore endeavored in the following pages to give a somewhat extended summary of the injuries which occur on the battle-field, with their consequences and treatment, as given by the best authorities, aided by my comparatively slight experience in the Army of the Potomac during the Peninsular Campaign.

For statistics I have been obliged to refer to Dr. Macleod's valuable work on the "Surgery of the Crimean War," as we have none, as yet, of the present war which are sufficiently connected to be of any value.

#### CHAPTER I.

##### *The Peculiarities of Gun-shot Wounds, and their general Treatment.*

The sensation caused by a gun-shot wound in a fleshy part, is usually described by the sufferer as resembling the effect of a smart blow from a supple cane. Some, however, feel as if a red-hot wire were passed through the part; while others are entirely unconscious of any wound, and are first apprised of it by the flowing of blood. This seems impossible; but Macleod, in his "Notes on the Surgery of the Crimean War," affirms that he personally "knew an officer who had both legs carried away, and who said it was only when he attempted to rise that he became aware of the injury received." The present war has also afforded instances of a similar character.

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The "collapse" and mental trepidation which frequently follow the infliction of a wound, though useful as a diagnostic indication of the gravity of the injury, is not entirely to be relied on; for this often depends as much on the frame and "nerve" of the patient as on the severity of the wound. It is, however, important to remember that the "shock" succeeding gun-shot wounds is greater when the lower extremities are injured than when the arms suffer; and Chevalier makes the remark, that the shock is always greater when a ball strikes a muscle in action than when it impinges against one which is relaxed.

The destruction caused by a ball depends on its shape and velocity, the distance at which it is fired, the direction of its flight, and on the part struck. If fragments of metal are fired—as sometimes happens during sieges and riots—a very lacerated, irregular and dangerous wound may be produced. The shape, great velocity and peculiar motion of the conical ball gives a very different character to its wounds from that caused by the round musket-ball. If, when fired at short range, it strike a fleshy part, the conical ball produces, I think, less laceration than the old ball. But if, when fired at long range, it strike a bony part, with but little covering of flesh, such as the hand or foot, then the tearing, especially at the place of exit, is much more marked. The cause of this will be found in its retarded velocity, and also in the flattening of the ball against the bone, its diameter being thus increased before it escapes.

It is not always so easy, as the description of authors would lead one to suppose, to distinguish the wound of entrance from that of exit. That the former is more regular than the latter is generally true; but that the lips of the one are inverted while those of the other are everted, is seldom clearly evident. If the speed of the ball be great, and no bone struck, the size and discoloration of the wounds is very nearly the same. But if its flight be so far spent as to be retarded by contact with the body, especially if it encounter a bone or strong aponeurosis, then the wound of exit will be considerably larger than that of entrance. And this is particularly true of wounds caused by conical balls.

In M. Arnel's experiments, given in the *Journal Univer. de Médecine* for 1830, it is shown that a ball fired against a number of boards firmly bound together causes a series of holes, progressively increasing in size, so that a cone is formed by their union, whose base is represented by the last exit hole. M. Devergie's experiments on the same point also go to prove this.

To the military surgeon, and also to the medico-legal jurist, it is often of great importance to be able to determine whether the two apertures in a patient's limb have been caused by one ball, which is thus known to have escaped, or by two balls still remaining in the limb. The following instance, related by an Indian surgeon, will serve to illustrate this. A wound was found below and another

above the patella of a soldier. The former had all the appearance of the wound of entrance, and the latter of the wound of exit. The opening of an abscess in the thigh, a fortnight after, gave exit to a grape-shot, and it was found that each opening had been caused by a different ball.

M. Begin has made the following valuable observation in regard to the resulting cicatrices. That of entrance, he says, is generally white, depressed, and often adherent to the underlying parts; while that of exit is only a sort of irregular spot, which does not adhere to the parts below, and is sometimes so indistinct as to be concealed in the folds of the skin.

One marked characteristic of gun-shot wounds is, their healing only by second intention. Occasionally, however, an exception to this rule occurs. Dr. Stewart, of the English Army, reports a case which occurred during the Caffre war. A Fingo received a wound in the muscles of the back, and union without suppuration took place. Two things, however, must be necessary to produce so happy a result—a most healthy and temperate patient, and a very rapid flight of the ball.

Some very extraordinary cases are recorded, where a large body has entered through muscle, leaving so little appearance of its presence as entirely to escape notice. Baron Larrey mentions a case in which a ball weighing *five* pounds was extracted by him from the thigh of a soldier. The presence of so large a body had not been detected by the surgeon in charge, and the patient experienced no inconvenience from it, except a feeling of weight in the limb. Hennen, too, mentions a case which occurred at the battle of Seringapatam, in which a *twelve*-pound shot was found in the thigh of an officer; and "so little appearance was there of a body of such bulk that he was brought to the camp, where he soon expired, without any suspicion of the presence of the ball till it was discovered on examination."

Baudens affirms, that when a ball is cut out from among muscles, it is enclosed in a cellular envelope, which he calls "*kyste primitif*," as contrasted with the "*kyste definitif*," which forms its sac when it has long remained within the tissues. I have never seen this confirmed by any other author, nor have I been able to discover it myself.

Unless special precautions are taken to prevent the contraction of muscles which have been severely injured by ball, this most disagreeable result will be very apt to occur.

Tendons, from their toughness, elasticity, form and mobility, will often escape with little or no injury, especially if they are relaxed when struck. A round ball, especially if its force be nearly expended, and it should strike at an angle to the surface, is often deflected from its course by a strong aponeurosis like the "*fascia lata*." A conical ball is seldom, if ever, so turned.

But it is on bone that we see the most destructive effects of a ball. In regard to the old ball:—1st. If its line of flight is very oblique, and it strike against a flat bone, it may be thrown off, causing no other damage than depriving the bone of its periosteum. But if this occur with the bones of the head, great danger may ensue, as will be shown in another place. And such wounds of the long bones, though apparently trifling at first, are frequently very serious in their results; both from subsequent disease of the bone, on account of the detachment of the periosteum, and from inflammation being set up in the medullary canal. 2d. It may sometimes be flattened against the shaft of a long bone, without subsequent injury. This, however, can only occur when the ball is almost "spent." 3d. It may turn round a bone without injuring it. 4th. It may notch or partly perforate a long bone; may even enter the medullary cavity and remain there, causing, of course, the most dangerous symptoms. 5th. If the force be a little greater, it may split the bone longitudinally, without causing a transverse fracture. A case of this sort is related by Leveillé, and quoted by Malgaigne, in which an Austrian soldier, at Marengo, was struck by a ball in the lower third of the leg. He walked several miles to the rear, where he was seen, and his wound thought to be very slight. A superficial exfoliation of the bone was alone expected. His symptoms, however, became so serious that the leg was removed, when it was found that from the place where the impression of the ball existed, there proceeded several longitudinal and oblique clefts, which extended from the lower third of the tibia up to near the head of the bone. 6th. Into the spongy heads of bones a ball may be driven as into a plank of wood, with little or no splintering. 7th. It may pass through, causing a clean hole.

The conical ball, however, never acts in any of these ways. It is seldom, if ever, split itself, and always splinters the bone against which it strikes, to a greater or less extent, and that in the direction of the bone's axis. This tendency to splitting shows itself much more in a downward, than in an upward direction; so that the destruction which this ball occasions will be greater when it strikes the upper than the lower end of the shaft.

As a general thing any ball, no matter what its shape, will fracture and split a bone, if it strike about the middle of the shaft. But while the round ball causes but little comminution, the conical ball, especially if it have a broad deep cup at its base, like the Enfield rifle-ball, splits and fractures the bone to such an extent that large spiculæ are detached, and smaller ones are driven in all directions into the neighboring parts; and this is what renders fractures of the long bones, by the new ball, so dangerous.

There is no doubt but that a ball may remain imbedded in bone for a life-time, with very little if any inconvenience resulting therefrom; but this is decidedly the exception. Guthrie is very emphatic



in his directions to remove balls so placed, and predicts the most unfortunate results if this be neglected. And Malgaigne, after narrating several instances in which balls have remained without causing harm, concludes thus:—"It is necessary to mention these fortunate cases, as evidence of the resources of nature; but they hardly serve to weaken the force of the prognosis, when a ball cannot be extracted, or the essential indication of this sort of lesion, the extraction of a foreign body. This indication is, then, of the first importance."

Nerves usually escape injury by a ball. Still, if the ball has been rendered jagged by previous contact with some hard substance, it may cause grave injury even to the largest nerves, especially when they lie in close proximity to a bone. The paralysis which succeeds an injury to a nerve may come on at once, or be for a long time delayed; and may or may not be accompanied by pain. For instance, the hand has several times been known to waste, without pain, when some of its nerves have been injured.

But making all due allowance for the form, strong coat, and elasticity of arteries, it is wonderful how frequently they escape injury from gun-shot wounds. The rarity of primary hæmorrhage on the field is well known; and yet we constantly see wounds through the very course of large arteries. When primary hæmorrhage does occur on the field, it is more frequently from the veins, which are more easily cut than arteries.

We have fewer instances of the wandering of balls now than formerly. The conical ball generally takes the shortest route to and through its mark, and sometimes even further; for cases have been related where one ball has been known to pass through the bodies of two men and lodge in a third. But of the round ball many curious stories are told. Dr. Macleod, to whom I have before referred, narrates two instances: in one of these, the ball entered above the elbow and was removed from the opposite maxilla; and in the other it entered the right hip and was removed from the left popliteal space.

In examining a gun-shot wound, we must always bear in mind the possibility of some foreign substance, as a piece of the man's clothing or accoutrements, having entered with the ball; and its presence in the wound is often far more troublesome than the ball itself.

There has been a great deal of discussion and diversity of opinion in regard to the extraction of balls. Begin's precept, as given to the Academy, seems to me to coincide with both science and common sense. "Selon moi," he says, "l'indication de leur extraction est toujours présente; toujours le chirurgien doit chercher à la remplir; mais il doit le faire avec la prudence, et la mesure que la raison conseille. S'il recussit, il aura beaucoup fait en faveur du blessé. S'il s'arrête devant l'impossibilité absolue, ou devant la crainte de produire les lésions additionnelles trop grave, il aura encore satisfait

aux principes de l'art; et quel que soient les resultats de la blessure, il n'aura pas a se reprocher de les avoir laisse devenir funestes par son inertie." If we compare the opinions of surgeons, we find that while civilians frequently consider it a matter of secondary importance, military surgeons always place great weight upon its accomplishment. The question is, not whether balls *may* remain in the body without causing harm, but whether they do so in the majority of cases. Statistics prove conclusively that in the majority of cases they *do* cause harm and annoyance. Consequently, as "science is not made up of exceptions," and it is the unquestioned duty of the medical man, in treating his patient, to consider his permanent welfare rather than his temporary comfort, it appears to me that the early extraction of the ball in wounds of this sort should *always* be accomplished when practicable.

We have in this country had very few opportunities of learning the subsequent history of men who carried unextracted balls. But M. Hutin, chief surgeon of the "Hôtel des Invalides," of France, tells us that while 4,000 cases had been examined by him in five years, only 12 men presented themselves who suffered no inconvenience from unextracted balls, while the wounds of 200 continued to open and close until the foreign body had been extracted. This evidence, coming from such a source, is, to my mind, conclusive. For there is no other institution in the world, to my knowledge, where the opportunities for examining this class of cases are so complete.

The extraction of a ball is not generally difficult, particularly if we can see the patient soon after the infliction of his wound. It is of great importance to extract the ball, if possible, before inflammation has set in; as otherwise the wound is more or less closed, we cause more pain, and our chance of easily finding the ball is diminished.

The first thing is, to place the patient in the same position, as nearly as possible, as that which he occupied at the time of injury; also to place ourselves, relatively to him, in the direction from which the ball came. Taking into consideration what effect the bones and tendons in the neighborhood may have had in deflecting the ball, and consulting the patient's sensations, we shall generally, without much difficulty, succeed in finding it. By examining the clothing, we shall discover whether any part of it has been carried into the wound; and we should remember that sometimes a ball will carry in a cul-de-sac of the clothes and be withdrawn by it. I have before alluded to the awkward mistakes which sometimes occur when two wounds, having the appearance of the wounds of entrance and exit, are in reality caused by two balls. This should always be borne in mind when making such an examination.

Macleod, to show the importance of an early and careful examination, as well as that we should never rely too much on the patient's statement, relates the following case as having happened to himself in the Crimea. "A soldier wounded on the 18th of June came un-

der my care in the general hospital. His right arm, which had been fractured compoundly, was greatly swollen at the time of admission. I was told, and accepted the story, that the accident had been caused by a piece of shell, to which species of injury the wound bore every resemblance, and that it had been removed in the trenches. At the earnest solicitation of the patient, I contented myself with applying the apparatus for saving the limb, without minutely examining the wound. When removing the limb at the shoulder, a few days afterwards, to my great astonishment a large grape-shot dropped from among the muscles."

Sir Charles Bell has shown how the nerves may indicate to us the course, and sometimes the position of the ball. He says, "So when a ball has taken its course through the pelvis, or across the shoulder, the defect of feeling in the extremity, being studied anatomically, will inform you of its course; that it has cut, or is pressing on a certain trunk of nerves."

We should always make certain of the position of a ball, immediately before taking any steps for its removal; remembering the rule laid down by Dupuytren, never to act upon information regarding the site of a ball, obtained the day before, from the very rapid manner in which they often shift from one spot to another.

If the wound be large, as it generally is from a conical ball, the finger is the best probe; otherwise, or if the wound be too deep for the finger, a large gum-elastic bougie is the best substitute.

There have been an infinite variety of instruments invented for the extraction of balls. Macleod prefers the common dressing forceps, if long enough and fine enough in the handle. Larrey used the polypus forceps in preference to anything else; and I must say that I agree with him in thinking them the most useful and convenient.

It is of great importance to sustain the limb with the disengaged hand, on the side opposite to that at which we introduce the forceps. If the ball lie at all near the surface, and especially if its course has been from above downwards, we should always cut upon it; as by this course we facilitate its removal, and provide an opening for the pus. The long continuance of the discharge, its gleety character, and the persistence of pain in the track, is almost always occasioned by the presence of some foreign body—it may be a mere shred—in the wound.

The constitutional fever which succeeds a gun-shot wound is generally, though not always, in proportion to the part injured. The fever will frequently be of an endemic or epidemic character; but in war the tendency seems chiefly to be to a low typhoid type.

The mitigation of the constitutional fever and of the local inflammation; the prevention of all accumulations of pus, by making judicious escapes for it; the application of light, unirritating dressings; rest, and attention to the essential principles of all surgery, comprise the general treatment which gun-shot wounds usually require.

In the early stages cold, even ice as recommended by Baudens, may be of great use; and in wounds of the hand and fore-arm, irrigation is said to be of service. But when inflammation and suppuration are present, hot applications will always be found the most beneficial, as well as the most grateful to the patient. Strict attention to the position of the limb is of the utmost consequence.

Soldiers in war are easily depressed, and should not be too sparingly fed, when admitted to hospital, unless suffering from a wound of the head, chest or abdomen. There is too much tendency to look upon gun-shot wounds, as a class, as highly inflammatory, and to treat them accordingly. Velpeau's rule, and it seems to me to be a common-sense one, is to remove his wounded and operated on as little as possible from their ordinary diet, when hungry, and when there is no disturbance of the digestive or circulatory systems.

By gentle syringing with lukewarm water, from one opening to the other, we get rid of any shreds of cloth, clots of blood, pus, &c., which may be lodged in the wound, sustaining the suppuration, with very little disturbance of the parts. The French are in the habit of employing, with apparent advantage, a lotion composed of one part of the perchloride of iron and three parts of water, in profusely suppurating wounds.

Shell wounds and grazes by round shot are often attended with much injury, deep seated, and often little suspected; and not unfrequently result in wide-spread sloughing of the soft parts. The following case, which occurred at Sadoolapore, is an excellent illustration of this, and is an instance of what in former times would have been set down to the wind of the ball. "Private Conally was hit by a round shot on the outer side of the right arm and thorax. A blue mark alone was occasioned on the arm, and little or no mark was found on the chest. He died in twenty hours, without having rallied from the shock. The peritoneal cavity was found full of dark blood. The right lobe of the liver was torn into small pieces, some of which were loose and mixed with blood. There was no sign of inflammation of the peritoneum, and the other viscera were healthy."

There have been many instances of the very near approach, and even slight contact of round shot, without any further inconvenience arising therefrom than might naturally be looked for from the unexpected and unwelcome vicinity of such an intruder.

[To be continued.]

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THE whole number of patients treated in the Hamilton (C. W.) City Hospital during the last year was 510—in-door, 293; out-door, 217. There were 16 births in the hospital during the year—males, 4; females, 11; stillborn, 1. Discharged—cured, 148; relieved, 56; not benefited, 11; deceased, 43.

# LONG-CONTINUED USE OF SULPHURIC ETHER, WITHOUT FATAL RESULT.

[Communicated for the Boston Medical and Surgical Journal.]

MESSRS. EDITORS,—Believing that the following fact is fully corroborative of the statement made by you in your last number, in reference to sulphuric ether, viz., "that it would be next to impossible for any one, even with the intent to commit suicide, to kill himself by this anæsthetic (sulphuric ether)," I hasten to send some details, for the correctness of which I can vouch.

In the spring of 1862, I was requested to visit F. X. S., residing in this city, then suffering under a periodical neuralgic attack of the most excruciating character. Having tried, but in vain, all the remedies which were suggested, I recommended change of air to the country, exercise, &c.

Soon after this, he addressed himself to another physician, who, during the paroxysms, administered chloroform; but, his sufferings continuing unabated, he then recommended him to try hydropathy in one of the establishments in the United States. While there, sulphuric ether was substituted for chloroform. But he soon returned to Quebec, and placed himself under treatment in one of our hospitals, deriving, however, no benefit. Finally, he went to board with a family in St. John's suburbs, and after having spent six weeks there, isolated from his friends, one of his brothers, who had visited him the night before, requested me to take him again under my professional care. I found him in the most wretched condition—face swollen, countenance haggard, emaciation and weakness extreme, in fact he looked like a ghost. His mind was completely gone; what little strength and energy remained to him being expended in his demands for ether, which had been removed from him. His landlady informed me that during the previous five weeks my patient had bought eighty (80) pounds of ether, of which but four pounds and a half remained. His sole occupation during those five weeks was to breathe the ether, which he did during the night as well as the day. His appetite was entirely gone, and during this whole period he had taken but the smallest quantity of food.

I ordered broths, wine, and such substantial food as he could be induced to take. In three days his mind was completely restored, and his strength improved. His neuralgic affection, however, continued, and he died some months after under the care of a quack.

Of course a considerable proportion of the above-mentioned quantity of ether would be lost during the process of inhalation; still for *five weeks* the man was almost constantly under its influence, and did not die. On the contrary, on leaving off the ether, he soon recovered from the effects of the enormous quantity he had previously taken; all which goes, in my opinion, fully to confirm your statement, namely, "*that it would be next to impossible for any one, even*

with the intent to commit suicide, to kill himself by this anæsthetic (sulphuric ether)."

F. A. H. LARUE, M.D.,

{ Prof. de Médecine Légale and Toxicologie,  
à l'Université Laval.

Quebec, Canada East, Feb. 1st, 1865.

#### ANTHELMINTIC PROPERTIES OF BENZINE.

PROFESSOR MOSLER has continued his researches on the anthelmintic properties of benzine, which, according to him, takes the first rank amongst all the remedies of this kind, and is tolerated by the human system in considerable doses without unpleasant consequences. Large doses of benzine kill the trichinæ of the intestines, and thus prevent the immigration of their progeny into the muscles. Benzine would therefore appear to be the best remedy for the early stage of trichinosis. Professor Mosler has employed benzine largely in the epidemic of that disease which raged last spring in Quedlinburg. At first it was given in "capsules gélatineuses," but this soon proved too expensive and troublesome, and the following formula was therefore adopted:—R Benzini, ʒ ij.; succi glycyrrh. mucilag. gummi. arab. aa. ʒ i.; aq. menth., ʒ iv.; a tablespoonful every hour or two hours (shake the bottle). This preparation agreed very well with the patients. Many of them mentioned that they felt much better after it, that the muscular pains were less severe, &c. They took two drachms per diem for four or six days in succession, and yet, although there was violent fever, no unpleasant results occurred which could have been attributed to the medicine. It seems that the poisonous effects of benzine observed in the first experiments on animals were partly due to the method employed. In those cases benzine was poured into the mouths of the beasts, and part reached the trachea and the lungs, after which fatal pneumonia set in. If, on the contrary, the benzine was mixed with the food the animals remained in good health. The general results of the administration of benzine in the epidemic just mentioned will soon be published. Professor Mosler afterwards experimented on four pigs, which were fed with trichinous rabbit's flesh. Pig number 1 was then left without any medicine, number 2 took sulphate of soda, 3 and 4 took benzine. In number 1 severe morbid symptoms set in about a fortnight after infection. The animal became much emaciated and weak on its legs, the eyes were dim, the voice exceedingly hoarse, and it often screamed with pain. The pulse was fast, the skin very hot, the thirst considerable. All these symptoms were entirely wanting in Nos. 3 and 4, which had eaten the same quantity of trichinous meat, but had been treated with benzine a week after infection. From this it was justly concluded that a much larger number of trichinæ had immigrated into the muscles of number 1 than in those of Nos. 3 and 4. In order to be quite certain about this point, twenty days



after infection a small piece of the pectoralis-major muscle was excised from the three pigs, and a quantity weighing one-twentieth of a gramme (less than a grain) was found to contain in number 1 about 257 trichinæ, while in number 3 there were 95, and in number 4 the same number. The worms were counted over several times in order to avoid mistakes, which proved very trifling. The morbid symptoms went on increasing in number 1 until three weeks after infection, when Professor Mosler thought of trying whether, by the administration of benzine in that advanced stage of the disorder, benefit might still be obtained. After the first dose had been given the severity of the disorder did no longer increase, and after a few others there was more appetite and less heaviness. The animal took altogether four ounces of benzine within twenty days, without any bad results. After that time most of the morbid symptoms had disappeared. A piece of flesh was now excised for ascertaining whether there had been any effect on the trichinæ in the muscles, but they were found to be still living, and even larger doses of benzine, which were subsequently given, killed only a few of them.

Pig number 2 was fed with the same quantity of trichinous rabbit flesh as number 1, but from the seventh day it took daily half an ounce of sulphate of soda with the food for some time. Copious diarrhœa ensued, but no intestinal trichinæ could be found in the feces, so that it would appear that ordinary purgatives have no action on intestinal trichinæ. The symptoms of trichinosis were well-marked in this animal.

Pig number 3 was fed with trichinous meat as before, and had no medicine for eight days, in order that the use of benzine might only be commenced at a time when it is possible, in certain cases, to diagnosticate trichiniasis in man. After the first dose of benzine the animal passed sixteen ascarides, a fresh proof of the anthelmintic properties of this drug. No morbid symptoms appeared, from which it was concluded that benzine had killed, if not all, at least a large number of intestinal trichinæ. This supposition was confirmed by the examination of a piece of flesh excised from the pectoral muscle, and in which the number of trichinæ found was, as has been stated, considerably less than in pigs number 1 and 2. The animal continued to take two drachms of benzine per diem for some time, and did exceedingly well.

Pig number 4 was treated much in the same manner, and never fell ill at all. Benzine agreed so well with it that it grew very much, taking at one time two ounces of that drug per diem for five days consecutively. It would therefore appear that a cautious administration of benzine in man cannot be hurtful. Professor Mosler is at present experimenting upon the action of benzine on tapeworm, and it would certainly be a boon if he were to give us a certain remedy for this troublesome parasite, which so frequently baffles



all our well-meant and energetic therapeutical efforts.—*Berlin Correspondence of London Medical Times and Gazette.*

### Bibliographical Notices.

*Outlines of the chief Camp Diseases of the United States Armies as observed during the present War. A Practical Contribution to Military Medicine.* By JOSEPH JANVIER WOODWARD, M.D., Assistant Surgeon U.S.A.; Member of the Academy of Natural Sciences, Philadelphia; of the Pathological Society of Philadelphia, &c. &c. Philadelphia: J. B. Lippincott & Co.

SINCE the current of medical literature, which almost stopped at the beginning of the rebellion, began to flow again, the number of practical medical treatises on subjects directly connected with the one absorbing topic of the nation's interest has been steadily increasing, until now the American Army Surgeon need hardly look for the fullest information on the subjects which present themselves most frequently to his notice beyond the publications of our own country. In many respects he will find himself better instructed by these than by any works of foreign authors. So vast has been the scale on which the destructive game of war has been carried on, so novel the circumstances often under which immense bodies of men have been placed, that it has been found that peculiar features have marked the manifestations of disease, calling for special study and exactness in diagnosis, and peculiar judgment and care in management and treatment. The book before us is one of the best fruits of the practical experience of a faithful student and laborious worker in the melancholy field which the war has opened. Having in mind the preparation of such a work at a very early date, he has had constantly before him a definite object by which his abundant opportunities for observation and practice have been guided. This stimulus has kept his mind in constant activity and given precision to his researches. And we may well thank him for the honorable ambition which led him to pass beyond the bounds of daily duty, in itself a labor calculated to satisfy no mean ambition, and to take from the hours usually devoted to recreation or repose the time requisite for the task.

In addition to his experience in the field during the first year of the war, the author has enjoyed peculiar opportunities for the preparation of the work before us, by his position as Medical Historian of the Rebellion, under the direction of the Medical Department, by the abundant opportunities of observation afforded by the military hospitals at Washington, and by virtue of his office as Curator of the Medical and Microscopical Departments of the Army Medical Museum, which has opened to him a large field for pathological study. Making a diligent use of his opportunities, he has produced a work of great practical value. In turning over its pages we see at once that the author is a man of enlightened mind, a diligent and thorough student, conversant with the most recent views in pathology and histology, and wise in his theories of treatment. Made up, as the vast medical staff of our army is, of men from all parts of the country,

coming from districts where the most opposite types of disease are found, indoctrinated with the most diverse opinions on questions of therapeutics, it is easy to see how grave and wide-spread injury may result from preconceived views of treatment, directed rather against names than things, and controlled by local theories or customs. To meet such a danger, therefore, we cannot too much commend the wise, judicious and temperate spirit in which the work before us is written. We hope it will become a tent companion to the surgeons throughout our armies. It will be found a faithful adviser on all the topics of which it treats.

We do not propose to analyze Dr. Woodward's book—its character is well described by its title, and no analysis could do justice to a work of so decidedly practical a character. A few of the numerous statistical statements which it contains will interest our readers. Speaking of camp fevers, he says:—

"Camp fevers caused about one-third of all the deaths from disease reported in the army during the first year of the war; nevertheless they have not been nearly so fatal, in proportion to the number of cases, as the camp fevers of the European armies. Of 74,619 cases, 6315 are reported to have died, which would be in the proportion of one death to every 11·8 cases. Compare these figures for a moment with those given by M. Scribe of the camp fevers of the French Army in the Crimea, where, out of 11,124 cases, 6018 deaths are reported, or one death to every two cases. The cases of our camp fever which assume in their progress a decidedly typhoid character, so as to be ordinarily confounded with typhoid fever, are the most fatal; of the 74,619 cases above mentioned, 21,977 are specified in the reports as "*Febris Typhoides*," and of these 5608 died, or nearly one in four. Even this, however, falls far short of the French statistics.

"The mortality of the fever differs considerably in the various regions of the continent: among the troops on the Atlantic coast the ratio of deaths was 7·19 per thousand cases, or one death in every 13·9; in the great central basin between the Appalachian and Rocky Mountains it was 10·18 per thousand, or one in 9·8; while on the Pacific slope the ratio was 4·52 per thousand, or one in 22·1. It has been seen already that camp fever is more frequent in the central than on the Atlantic, and more frequent in this than in the Pacific region. It may now be affirmed that the severity and fatality of the disease pursue the same order of intensity.

"These figures will prove some guide to the surgeon in anticipating the results of cases. The utmost caution should, however, be used in prognosticating the result in individual instances; the slightest cases occasionally terminate fatally, while on the other hand patients are unexpectedly snatched from the very jaws of death, and recover after all hope has been abandoned."

A good deal has been said, from time to time, of the comparative exemption of the United States Army from venereal affections, and this exemption has unquestionably been rightly attributed in a great degree to the superior moral character of our troops. As bearing upon this point we have the following statement. During the year beginning July 1, 1861, and ending June 30, 1862, 23,779 cases of venereal affection were reported as follows:—

|                                    |              |
|------------------------------------|--------------|
| Primary syphilis . . . . .         | 6,359 cases. |
| Secondary syphilis . . . . .       | 2,652 "      |
| Gonorrhœa . . . . .                | 11,638 "     |
| Orchitis . . . . .                 | 2,722 "      |
| Stricture of the urethra . . . . . | 408 "        |
| Total . . . . .                    | 23,779 "     |

"So that one soldier in every 12 (11·8) suffered from affections of this order. Of these the total of syphilis, including both primary and secondary, was 9011 cases, or one in 31 (31·2). The total of gonorrhœa and its sequelæ (orchitis and stricture) was 14,768 cases, or one in 19. While it is true that in many instances the distance of the great camping grounds from cities has had its influence in producing this result, it must be admitted that when the loose mode of inspection of recruits, the liberal furlough system, and the general laxity of discipline which has hitherto prevailed in the armies of the United States, is taken into consideration, it is difficult to reconcile these figures with the idea advanced from many sources that syphilis prevails as extensively in the United States as in European countries. Compare, for example, the preceding statement with the condition of the British army in the United Kingdom as recorded in the statistical reports for 1859-60. In 1859 venereal diseases of every class are reported as having produced nearly one half of all the admissions into hospital, the figures being '422 admissions into hospital on account of venereal among every 1000 men serving in the United Kingdom.'

"In 1860 the proportion admitted into hospital was 369 per thousand.

"The average proportion of these two years would be more than one case to every three men (1 to 2·5), as contrasted with one to every twelve men (1 to 11·8) in our own army."

We are glad to see that Dr. Woodward is most emphatic in his condemnation of the so-called heroic practice in the treatment of the acute diseases of our soldiers. In discussing the treatment of pneumonia he says:—

"The treatment of pneumonia, as directed in the text-books most widely circulated in this country, may be briefly sketched as follows: Bloodletting, both local and general, purgatives, and antimonials in the early stages of the disease; mercurials in the stage of consolidation; expectorants and stimulants in the latter stages, after the expectoration begins to assume a purulent character.

"So far as the treatment of pneumonia in the army is concerned, there can be no doubt that the plan above sketched is altogether inadequate, and that it increases rather than diminishes the mortality of the affection. The experience of the last two years permits no other conclusion, and we are compelled to believe that bloodletting, antimonials and mercurials are not available for the treatment of camp pneumonia at least, whatever may be affirmed of their efficacy in private practice by those who still cling to the habitual employment of these renowned remedies."

We are forcibly reminded by this and similar paragraphs of the famous calomel and antimony Order of the Ex-Surgeon-General; and which, if the truth were known, would, we think, be found to have had not a little to do with the unrelenting hostility which has been

successful in depriving him of his place of usefulness and honor. The wholesale character of the Order may have embarrassed some medical officers who knew how to handle such deadly instruments understandingly, but we are firm in the belief that much more good than evil resulted from it. But this *en passant*.

We take leave of Dr. Woodward's book, with an apology to the author for so long delaying the notice which it should have received on its first appearance, and the assurance to our readers that it will well repay a careful and studious perusal.

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*A Handbook of Uterine Therapeutics.* By EDWARD JOHN TILT, M.D., Member of the Royal College of Physicians; Consulting Physician to the Farringdon Central Dispensary, &c. &c. New York: William Wood & Co.

THE name of Dr. Tilt is a reliable authority on the class of diseases to which he has devoted so much attention, and is almost as well known on this as on the other side of the water. Anything from his pen is sure to find interested readers, for we feel that he is speaking from an authoritative experience. The book before us is a pertinent illustration of this. It is sure to make its way wherever the name of the author is known. It is offered as the result of his patient study for years to determine the real, practical value of the various methods of treating inflammatory affections of the womb that have been advocated by eminent physicians during the past fifty years.

We have been struck in reading Dr. Tilt's writings by the great practical tact they exhibit; and we find this to characterize the present work. His introductory chapter on the moral treatment of the sensitive class of patients of which he is speaking, shows the author to be not only a gentleman, but one who shrewdly understands the psychological peculiarities of the gentler, we will not say the weaker, sex. And although it may elicit a sneer from the man who sees in such patients only subjects for a speculum exploration, which is to be employed on all occasions with as little hesitation or delicacy as is required of a dentist in pulling a tooth, yet we cannot too earnestly commend it to our younger brethren as worthy of their most attentive and considerate perusal. Professional success in this department especially demands of the physician great regard for the feelings of his patient, and great discretion. Nevertheless, there is no ridiculous squeamishness about our author, and he does not hesitate to use powerful methods of treatment when required. But he does not employ them haphazard, and he constantly shows how fully he recognizes the impressive nature of his patients, and the great liability in them to mimetic symptoms which call for the greatest judgment in managing them. Dr. Tilt's Handbook will find many interested readers, and is a valuable contribution to Uterine Therapeutics.

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IN the Butler Hospital for the Insane, Providence, R. I., during the last year there were admitted 49; whole number under care, 179. Discharged, 47—viz., recovered, 15; improved, 14; unimproved, 6; died, 12. On the 31st of December 132 remained.

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**THE BOSTON MEDICAL AND SURGICAL JOURNAL.**


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BOSTON: THURSDAY, FEBRUARY 16, 1865.

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**THE PATRONAGE OF SCIENCE.**—The support which New England has contributed to the cause of education during the last two or three years, a period in which her energies and sympathy have been so liberally bestowed in the holier cause of patriotism, is a matter in which we may certainly be excused for feeling a just pride, and which warrants bright hopes for the future of science in America. The entire absence in our country of that all-controlling central power which, when benignantly exercised, gives to the empire so much advantage over the republic in the foundation and support of great national schools, leaves to the wisdom and liberality of individual communities the whole burden of providing for the education of the people. How wisely this responsibility has been sustained in the management of our common schools, their reputation throughout the world bears satisfactory witness, but for thorough education in the higher branches of knowledge we have been obliged to depend upon the older and better endowed institutions of learning in Europe. That such is not to be the case always, however, our progress in the cultivation of some departments of science within a few years furnishes gratifying proof. The Chandler School at Dartmouth, the Sheffield School at New Haven, and similar schools of physical science connected with other colleges in New England, testify to the growing popular interest in these branches of education; but it is in Boston, where the first impulse was given to the advancement of such studies by one of her most liberal citizens in the foundation of the Lawrence Scientific School, that the most generous response has been made to recent efforts to provide for the establishment of institutions similar to those so famous in other countries.

It is only a few months since we noticed the dedication of the noble structure for the accommodation of the museum and library of the Boston Society of Natural History, which has been erected since the beginning of the rebellion, and endowed with a permanent fund by the princely liberality of a member of our profession and the community of which he was so long a citizen. We are happy to state that the crowds which fill its large halls on exhibition days demonstrate conclusively the wisdom of such generosity and the interest felt by all classes in the study of nature. Adjoining it, and still in the process of erection, stand the buildings of the Institute of Technology, also a monument to the munificence of this same patron of science. This institution, which is intended to supply the long-felt need of a complete polytechnic school in this country, is under the direction of Prof. William B. Rogers, and has also been most liberally provided with a fund by gentlemen of this city. We understand that it is proposed to open at once the School of Mines connected with it, and certainly no more auspicious time than the present could be chosen for its inauguration.

In Cambridge a new fire-proof building has been erected by the

generosity of one of our citizens for the invaluable herbarium of Prof. Gray, which that eminent botanist has presented, together with his library, to the University. Every student of nature must rejoice that this immense collection is at last placed in a safe and accessible situation, and that a fund has also been raised for its support and increase. The Scientific School, too, has for some time been suffering for want of sufficient means of support, and the laboratory was sadly out of repair. "At this juncture," we quote the words of the *Daily Advertiser*, "Mr. James Lawrence comes nobly forward, and at once serves the cause of education, and maintains the honor of his father's name by the gift, on the first of January, 1865, of fifty-two thousand five hundred dollars—twenty-five hundred to be expended at once in the equipment of the laboratory, and the balance to endow equally the chemical and the engineering departments. This act not only maintains the honor of the father's name, but enrols that of the son on the same illustrious page."

"The object of the Scientific School and the results of the education to be obtained there, have been topics of earnest discussion and of some decided differences of opinion. In a public address a few years since, it was claimed that this school at Cambridge had proved that a broad and liberal education could be given without the waste of years over dead languages. We believe that neither Mr. Lawrence, nor the faculty of the school, make any claims of this sort. In order to a liberal education there must be instruction in history, philosophy and religion, whether history be taken as including the languages which have played the most important part in early European history or not. The student who has already received a liberal education is best qualified to pursue any of the special branches taught in the Scientific School; and if the movement, now so general in our country, for providing education in physical science alone either leads our young men to forsake the colleges, or the colleges to neglect the three higher departments above named, it will be a serious calamity to our nation. But the founders and managers of the Scientific School at Cambridge would be among the first to deprecate such an extension of the movement; and this munificent gift of Mr. James Lawrence will enable the Lawrence Scientific School to become a school of higher order, capable of instructing pupils of the highest previous culture."

Thus much has been accomplished, even within a year or two, for the advance of science among us by the generosity of private persons. That much still remains to be done by others equally considerate of the interests of the highest branches of education in America is, alas! true. We commend to the notice of those who are satisfied with our present condition, in medicine as well as other branches of learning, the following extract from the admirable recent report of Rev. Thomas Hill, President of Harvard University:—

"These university lectures are not simply a means of diffusing knowledge; on the contrary, many of them have contained positive additions to science, and suggestions of value only to earnest and advancing students. Thus, although some of the courses have been addressed to others than students in the narrower sense, yet, as a whole, they have done something toward supplying the great educational want of our nation, a university. Until we have an institution which can give



the highest culture to men of the highest abilities (and we have as yet no institution that even attempts or pretends to it), we can only be an inferior people, dependent on the Old World for the finer products of human skill in all departments, and especially in science itself—we can only diffuse the knowledge that others have gained. If the genius of our colleges is such that they must be confined to the diffusion of knowledge, and not allowed to contribute to its increase, then it is time that we should found a new institution, whose principal aim should be to further sound learning, to advance science, to insure the cultivation of philosophy and art and belles-lettres, and politics in the best and widest sense.

"But in order to do justice to undergraduates, and indeed to the students of the professional schools and academic department, a large increase of our means is needed. Our nation is contented with schools for the education of the masses, and our Commonwealth is justly proud of having brought them to the highest state of efficiency. But she greatly errs in supposing that she has done for her university what is really demanded for the education of those men who are her honor and her defence, her men of highest talent and industry."

**HEALING POWER IN VARIOUS NATIONS.**—The great vital energy of savage, compared with civilized nations, is shown by the relatively greater healing power of nature (*vis medicatrix nature*) possessed by the former. The experiments made in this respect extend to all races. Leigh mentions the case of an Australian whose temporal bone had been fractured by a blow, and the temporal artery divided, and of another whose ulna and radius had been fractured in a terrible manner, that the first took part on the following day in some public meeting, and that, though worms appeared in the arm of the second, the recovery in both took place without any operation or even dressing. Similar cases are to be found in Barrington and Dawson. Though but one in four recover from the operations of extirpation of the penis and the testicles, which are performed on Negroes by the slave-dealers in East Sudan, many examples prove that nature's healing power is as great here as among other Negroes. This extends also to the white races living in Africa, although Russeger points out that in the hot climate of tropical Africa, wounds heal very slowly in the European, especially during the rainy period. Others, however, maintain that in the tropics, *e. g.* at Trinidad, wounds heal rapidly even in Europeans. W. Earl ascribes the natural healing power among the Malays to their vegetable diet, which prevents violent inflammation. Petit reports a series of his own observations in Abyssinia, that those who are punished by having hands or feet cut off, as well as the children or adults who are emasculated or have the whole genitals extirpated, do not generally die from the operation, although the wounds are entirely left to the healing power of nature. Parkyns relates similar instances. To the Moors, Chénier ascribes that great innate healing power and insensibility to pain, which has been so often attributed to the native Americans. Rengger is also of that opinion, whilst many modern observers ascribe to the native Americans a highly sensitive and nervous constitution. The case resembles that of the Bedouin Arabs, who consider it a point of honor to exhibit no sign of pain.



With regard to the native Americans, a relatively greater healing power has been observed among the Blackfeet, the Indians of Paraguay and the Abiponians; and of native Mexicans we hear that they heal wounds which would be mortal to Europeans by merely washing them with brandy. Malays also frequently recover from injuries which would prove fatal to Europeans. Of twelve Tonga Islanders whose arms were cut off in the rudest manner, one only died from loss of blood and another from grief. Similar instances of Marquesas Islanders are reported by Marchand.

These examples prove that the healing power of nature is greater among savage than among civilized peoples. We must not, however, close these observations without mentioning another circumstance which has been made use of to establish the specific difference between the races of man, especially between the black and the white. It has been asserted that the lice of the Negroes are not only black and smaller than in Europeans, but that they do not exist in the former, whilst the European louse perishes in the tropics. Both these assertions seem to have been first made by Oviedo, which he qualifies by adding, that European vermin is rarely preserved, whilst that of the Indians only attacks some children of the whites born in America. As Peters proves to a certainty, that the European louse does not perish under the equator, there is no occasion to dwell further on this point. It is scarcely necessary to observe, that the domestic swine, though not specifically different from the wild hog, has a parasite which is wanting in the latter; the color of these animals changes with the color of the skin, on which account Sömmerring did not consider the *pediculus nigrilarum* as of a different species from the European louse. It seems also certain that both the head louse and the *p. pubis* of Negro nurses passes to white children. Quandt is at any rate incorrect when he asserts, that the fleas and lice of Indians and Americans did not infest Europeans. Neither do the various species of intestinal worms exclusively infest one race, though one species may more or less predominate in any people. Thus in England, Holland and Germany the *tenia solium* prevails; in Switzerland and in Russia, down to Königsberg, *bothrioccephalus latus*; in the south east of France both prevail; in Abyssinia and among the Hottentots *tenia* predominates.—Waitz's "Introduction to Anthropology."

CHITTENDEN COUNTY, VT., MEDICAL SOCIETY. *Messrs. Editors*.—An association of physicians has recently been organized in Chittenden County, Vt., under the above name. It is composed only of such practitioners of medicine as are eligible to membership in the State Society. The officers for the ensuing year are—Benjamin Fairchild, of Milton, President; L. F. Burdick, of Winooski, and H. N. Curtis, of Jericho, Vice Presidents; J. Fay Miles, of Hinesburg, Secretary; C. A. Sprague, of Williston, Treasurer; L. C. Butler, of Essex, F. F. Hovey, of Jericho Centre, and A. C. Welch, of Williston, Executive Committee. The annual meeting of the Society is held in October, and it is designed to hold quarterly meetings for mutual improvement in the science of medicine. At the meeting held on the 25th of January, a resolution was passed pledging the members of the Society to counsel with no quack or irregular practitioner, even though he may

have a diploma from a regular medical institution. The force of this resolution will be more apparent when I mention the fact that there are in this County and vicinity, graduates of recognized medical schools who are imposing upon the community under the appellation of Homœopaths, Eclectics, &c., and are anxious to be recognized as within the pale of the legitimate profession. It was deemed proper to have some concerted action against any recognition of their claims, as well to protect ourselves from imposition as to maintain the proper dignity of our noble profession. Every town in the County save one is represented in the Society, and its meetings promise to be interesting and profitable. At the meeting in April next papers on various subjects will be presented, together with written notes of important cases occurring in individual practice, of which your correspondent will keep your readers thoroughly informed.

There is in this vicinity a peculiar eruptive disease which exhibits more nearly the characteristics of *scabies* than any other of the skin diseases, and yet which is not amenable to the usual treatment for that eruption. It makes its appearance on the hands, but not particularly between the fingers; seldom, so far as my observation extends, in the groin; sometimes upon the abdomen, back and lower limbs, and upon the fore-arms. It is characterized by excessive itching, pustular eruption, scabbing, and when the scab peels off a redness remains underneath, which continues some days. It is highly contagious, and does not seem to require actual contact to propagate itself. It is said to have been brought into this vicinity from the army. What is it, and what will cure it? Will some of your correspondents inform us?

CLIO.

## VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, FEBRUARY 11th, 1866.

## DEATHS.

|   | Males. | Females. | Total. |
|---|--------|----------|--------|
| Deaths during the week  | 44     | 47       | 91     |
| Ave. mortality of corresponding weeks for ten years, 1853-1863, | 37.3   | 39.0     | 77.7   |
| Average corrected to increased population                       | 00     | 00       | 88.01  |
| Death of persons above 90                                       | 0      | 0        | 0      |

BOOKS AND PAMPHLETS RECEIVED.—Fourteenth Anniversary Meeting of the Illinois State Medical Society, May, 1864.—Defective and Impaired Vision, with the Clinical Use of the Ophthalmoscope in their Diagnosis and Treatment. By Lawrence Turnbull, M.D., Philadelphia.—Reports of the Trustees and Superintendent of the Butler Hospital for the Insane, Providence, R. I.—Report of the Pennsylvania Hospital for the Insane, for the year 1864.

DIED.—In this city, 10th inst., after a short illness, Peter Renton, M.D., aged 63 years 9 months and 5 days.

DEATHS IN BOSTON for the week ending Saturday noon, Feb. 11th, 91. Males, 44—Females, 47.—Accident, 4—anemia, 3—apoplexy, 5—Inflammation of the bowels, 1—congestion of the brain, 1—disease of the brain, 3—bronchitis, 2—consumption, 17—convulsions, 2—croup, 1—debility, 2—diphtheria, 1—dropsy, 2—dropsy of the brain, 3—dysentery, 1—erysipelas, 1—scarlet fever, 2—typhoid fever, 1—disease of the heart, 2—infantile disease, 6—disease of the liver, 1—congestion of the lungs, 4—Inflammation of the lungs, 7—old age, 4—pleurisy, 2—premature birth, 1—puerperal disease, 1—smallpox, 2—ulceration of the stomach, 1—unknown, 6—whooping cough, 1.

Under 5 years of age, 23—between 5 and 20 years, 10—between 20 and 40 years, 23—between 40 and 60 years, 14—above 60 years, 16. Born in the United States, 69—Ireland, 24—other places, 8.